
Space Weather Forecast

Issued on Thursday, 25 July 2024 at 12:09 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of R1 Radio Blackouts throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity was Moderate in the last 24 hours, with an M3 flare observed at 24/1721 UTC from a region now approaching the western limb.

There are currently eleven sunspot regions on the solar disc. The two closely residing spots in the southwest have continued a slow decay. The largest and most complex region is now approaching the centre disc. It continues to exhibit a proliferation of intermediate spots, with up to two elements of magnetic complexity. All other remaining regions are small or simple.

A weak halo was observed shortly after 25/0025 UTC on Coronagraph and Stereo imagery. While dimming was observed originating from AR3762 near the centre disc, the timing doesn't match (the halo appearing slightly before the dimming), which suggests that this CME is most likely far sided. The spectrometer onboard Solar Orbiter also recorded an estimated X7 at 24/2325 UTC, likely reinforcing the idea of a far-sided event. No Earth-directed CMEs have been observed in available imagery.

Solar Wind / Geomagnetic Activity: Slow wind conditions largely persisted, however with a very small discontinuous increase in the total magnetic field at 25/0730 UTC. Speeds remained slow throughout. The interplanetary magnetic field was mostly Weak but became Moderate after 25/0730 UTC, with a similar increase in the important north-south component. The net result of the above solar wind measures was for Quiet (Kp 1-2) geomagnetic indices.

Energetic Particles / Solar Radiation: Radiation levels have returned back to background levels after a period above S1 during 23 Jul following a large far sided full halo coronal mass ejection.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with a chance of further Moderate-class flares.

Solar Wind / Geomagnetic Activity: No coronal hole fast winds feature in the forecast period. A CME may give Earth a glancing blow late on Day 2 or perhaps early on Day 3 (26/27 July), originating from a long period M2.4 flare close to the southeast limb on 23 Jul. Confidence is low though.

Geomagnetic activity is expected to be mostly Quiet with a chance of Unsettled and Active intervals on Day 2 or early Day 3 (26/27 July) and a slight chance of G1/Minor storms.

Energetic Particles / Solar Radiation: There is a slight chance of rising above the S1/Minor Storm threshold in response to any notable flares throughout the period.

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Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	1	30	20	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	Yes	50	50	50	50
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)